



# NONPOINT SOURCE SUCCESS STORY

# Delaware

## Best Management Practices Reduce Bacteria and Restore the Pocomoke River

### Waterbody Improved

Runoff from agricultural areas contributed to high bacteria levels in Delaware's Pocomoke River. As a result, the Delaware Department of Natural Resources and Environmental Control (DNREC) added the watershed to the 1996 Clean Water Act (CWA) section 303(d) list of impaired waters for Enterococcus bacteria. Watershed stakeholders provided technical assistance and installed agricultural best management practices (BMPs) in the watershed from 2016 to 2020, reducing bacteria levels and restoring the watershed. As a result, DNREC removed Pocomoke River from the state's 1996 list of impaired waters for bacteria in 2020.

### Problem

The Delaware portion of the Pocomoke River watershed covers 35 square miles and includes four headwater tributaries: Bald Cypress Branch, Gum Branch, Lewis Prong, and North Fork Green Branch (Figure 1). All Delaware tributaries flow south into Wicomico and Worcester counties, Maryland, and drain directly into the Pocomoke River. The Pocomoke River system divides the two counties, with Wicomico County on the west and Worcester County on the east. Sources of nonpoint source pollution in the watershed include runoff from agricultural activities (e.g., fertilizer and manure application) and concentrated areas of animal production.

Monitoring data indicated the Pocomoke River failed to meet the state's Enterococcus bacteria numeric criterion, which requires that the annual geometric mean be less than 100 colony-forming units (cfu) per 100 milliliters (mL). As a result, DNREC added the watershed to Delaware's 1996 CWA section 303(d) list of impaired waters for bacteria.

The Chesapeake Bay Drainage Basin bacteria total maximum daily loads (TMDLs) were established in 2006 and include the Pocomoke River. Implementing the TMDLs is expected to reduce bacteria levels in the Pocomoke River by 30% from the 1997–2004 baseline level. To meet the state water quality standard, bacteria levels must be below a geometric mean of 100 cfu/100 mL for bacteria.

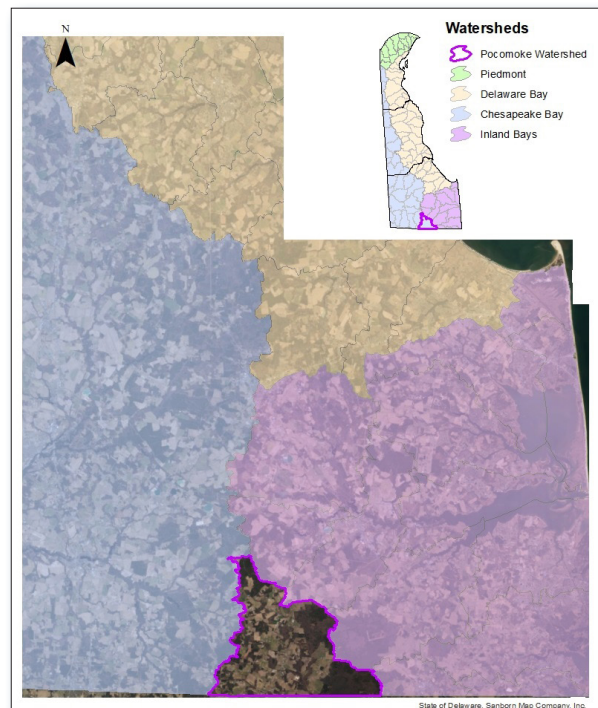


Figure 1. The Pocomoke River begins in south Delaware.

### Story Highlights

The Sussex County Conservation District (SCD) offered technical assistance, including nutrient management planning and cost-share funding for agricultural BMPs, to local producers. SCD also partnered with the U.S.

Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) to develop conservation plans and Environmental Quality Incentive Program contracts. Watershed partners worked with landowners to enroll an average of 2,078 acres of cover crops and implement nutrient management plans on 3,145 acres over five years (2016–2020).

Several BMPs were installed on operations within the watershed, including four manure storage structures, four poultry carcass composters, 39 heavy use area protection pads, and several other practices available through NRCS. The manure relocation program, in coordination with the Delaware Department of Agriculture, supported the transfer of 11,480 tons of manure out of the watershed in 2016–2020. SCD planners continue to work with farmers throughout the watershed, providing ongoing technical assistance to ensure improved water quality.

Delaware’s USDA Conservation Reserve Enhancement Program (CREP) was established in 1999 to protect and enhance environmentally sensitive land and waters in the Delaware, Chesapeake, and Inland bays coastal plain areas by establishing voluntary land retirement agreements with agricultural producers. To assist in CREP program development and implementation, in 1999 Delaware’s Nonpoint Source Program committed CWA section 319 funds to create a full-time Delaware CREP Program Coordinator position. Since the program’s inception, the CREP Program Coordinator helped install 170 acres of hardwood trees, 73 acres of filter strips, 36 acres of Permanent Wildlife plantings, and 13 acres of wetland restoration in the Pocomoke River watershed.

## Results

Bacteria levels have decreased in response to the more than 10 years of water quality protection and restoration efforts in the Pocomoke River watershed (Figure 2). DNREC collected monitoring data at Station 313011 in the Pocomoke River. The geometric mean of the 42 samples collected for 2020 was 83.5 cfu/100 mL. This is below Delaware’s freshwater bacteria water quality standard of a geometric mean of 100 cfu/100 mL, enabling the removal of the 11.8-mile segment of the Pocomoke River (DE-250-001-01) from Delaware’s list of impaired waters in 2020.

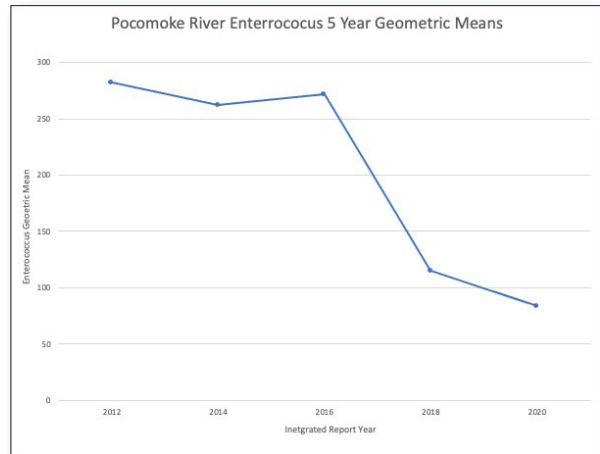


Figure 2. Pocomoke River *Enterococcus* bacteria five-year geometric means (2012–2020).

## Partners and Funding

Key partners included SCD, NRCS, and the Delaware Nonpoint Source Program. Between 2006 and 2021, NRCS funded over \$4.5 million in implementation efforts within the watershed. Another \$335,000 in federal CWA section 319 funds also supported the costs of the Pocomoke River restoration effort. Funding provided by watershed partners has been extremely important in this endeavor. Implementation efforts within the watershed are continuing through the collaborations and working relationships formed by the watershed partners and producers.



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